STATE OF GEORGIA

TMDL IMPLEMENTATION PLAN FOR: **Bear Creek, fecal coliform**
(stream and parameter)

RIVER BASIN: **Chattahoochee River**
Plan date: March 30, 2001

Prepared by: Atlanta Regional Commission for the Douglas County Board of Commissioners
Address: 8700 Hospital Drive
City: Douglasville
State: Georgia
Zip: 30134
Date Submitted to EPD: March 30, 2001

General Information
Obtain this information from the TMDL document or other information. When completed, this document will be a self-contained report independent of the TMDL document.

TMDL ID (to be entered by EPD)	
Water body name	**Bear Creek**
HUC basin name	**Bear Creek**
HUC number	~~**03130002300**~~ 0313000203
Primary county	**Douglas County**
Secondary county	
Primary RDC	**Atlanta Regional Commission**
Secondary RDC	
Water body location	From: **Lakeside Dr.**
	To: **Bear Creek Reservoir**
Miles or area impacted	**4 miles**
Water use classification	**Fishing**
Degree of impairment	Partially supporting use: **YES**
	Not supporting use:
Date TMDL approved by EPA	February 19, 2001
Impairment due to	Point source:
	Nonpoint source: **YES**
	Both:

Point source- Form A; nonpoint source- Form B; both-Form C

Significant Stakeholders
Identify local governments, agricultural organizations or significant land holders, commercial forestry organizations, businesses and industries, and local organizations including environmental groups with a major interest in this water body.

Name/Organization	**Mike McBrier, P.E., Director of Public Works**
	Douglas County Public Works Dept., Engineering Div.
Address	**8700 Hospital Drive**
City/State/Zip	**Douglasville, GA 30134**
Telephone	**(770) 920-7243**
E-mail	**mmcbrier@co.douglas.ga.us**
Name/Organization	**Eric Linton, AICP, Director of Developmental Services**
	Planning Department, Douglas County
Address	**8700 Hospital Drive**
City/State/Zip	**Douglasville, GA 30134**
Telephone	**(770) 920-7241**
E-mail	**elinton@co.douglas.ga.us**
Name/Organization	**Peter Frost, DDCWSA**
Address	**PO Box 1157**
City/State/Zip	**Douglasville, GA 30133**
Telephone	**(770) 949-8669**
E-mail	**pfrost@ddcwsa.com**
Name/Organization	**Robert Gore, Environmental Health Services**
Address	**8700 Hospital Drive**
City/State/Zip	**Douglasville, GA 30134**
Telephone	**(770) 920-7311**
E-mail	

Significant Stakeholders Page 2			
Name/Organization	**Tony Gonzalez, Friends of Douglas County**	Name/Organization	**UGA Cooperative Extension Service**
Address	**5540 South River Road**	Address	**8700 Hospital Drive**
City/State/Zip	**Douglasville, GA 30135**	City/State/Zip	**Douglasville, GA 30134**
Telephone	**(770) 947-8080**	Telephone	**(770) 920-7224**
E-mail	**tonygonz@mindspring.com**	E-mail	
Name/Organization	**Chris Collier, Executive Officer**	Name/Organization	**Natural Resource Conservation Service**
	Homebuilders Assc. of Douglas Co.	Address	**8700 Hospital Drive**
Address	**PO Box 1272**	City/State/Zip	**Douglasville, GA 30134**
City/State/Zip	**Douglasville, GA 30133**	Telephone	**(770) 920-7246**
Telephone	**(770) 577-1955**	E-mail	
E-mail	**Chris-Collier@email.msn.com**		
Organization	**Large Landowners (>100 acres)**		
Name	**Loveless Development**		
Address	**205 Pebble Beach Drive**		
City/State/Zip	**Fayetteville, GA 30215**		
Telephone	**(770) 716-1516**		
E-mail			
Organization	**Large Landowners (>100 acres)**		
Name	**Herbert and Mary Fouts**		
Address	**6116 Fouts Mill Rd**		
City/State/Zip	**Douglasville, GA 30135**		
Telephone	**(770) 942-2594**		
E-mail			
Name/Organization	**Sam Land, Asst. Superintendent of Operations**		
Address	**Douglas County School District**		
City/State/Zip	**PO Box 1077**		
Telephone	**Douglasville, GA 30133**		
E-mail	**(770) 920-4000**		
Name/Organization	**Georgia Soil and Water Conservation Commission**		
Address	**Region III 1500 Klondike Rd**		
City/State/Zip	**Conyers, GA**		
Telephone	**(770) 761-3020**		
E-mail			

Form B

SUMMARY OF ALLOCATION MODEL RESULTS FROM TMDL DOCUMENT (existing load, target TMDL, and needed reduction)

EXISTING LOAD	TARGET TMDL	NEEDED REDUCTION
130cfu/100ml (geometric mean)	**175cfu/100ml (geometric mean)**	**?????**

The TMDL needs to be reviewed as part of the process.
This TMDL Plan is proceeding with the above target goal.

I. IDENTIFY **NONPOINT SOURCE** CATEGORIES AND SUBCATEGORIES OR INDIVIDUAL SOURCES WHICH MUST BE CONTROLLED TO IMPLEMENT LOAD ALLOCATIONS:

List major nonpoint sources contributing to impairment including those identified in TMDL document .

SOURCE	DESCRIPTION OF CONTRIBUTION TO IMPAIRMENT	RECOMMENDED LOAD REDUCTION (from TMDL)
Agriculture	**nonpoint**	**20%**

The TMDL analysis apparently did not take into account recent suburban development in the basin which could also be a source of fecal coliform

Given this particular watershed, the possible likely source of contamination is stormwater runoff associated with:

1. Leaking or failing septic tanks,
2. Leaking sanitary sewers,
3. Animal waste, domestic and undomestic, and
4. Illicit discharges.

II. DESCRIBE ANY REGULATORY OR VOLUNTARY ACTIONS INCLUDING MANAGEMENT MEASURES OR OTHER CONTROLS BY GOVERNMENTS OR INDIVIDUALS THAT WILL HELP ACHIEVE THE LOAD ALLOCATIONS IN THE TMDL:				
Existing or required regulatory actions				
RESPONSIBLE GOVERNMENT, ORGANIZATION OR ENTITY	NAME OF REGULATION OR ORDINANCE	DESCRIPTION	ENACTED OR PROJECTED DATE(mm/yy)	STATUS
Douglas County Planning and Zoning	**Watershed Protection Regulations - Bear Creek Watershed**	**100-ft stream buffers, 150-ft setbacks for all impervious surfaces, septic tanks, drain fields and animal livestock/pasturing, keeping or grazing, maximum 25% impervious surface area, maximum residential sewered density of 2.5 du/ac and unsewered of 1 du/ac**	**Mar-01**	**enforced**
Douglas County Environmental Health Department	**Rules and Regulations for On-site Sewage Management**	**Septic System code - Permits include pre-site analysis and suitability determination, requires installers to be certified, inspections during and after installation required, enforced sanctions on violations.**	**latest update Feb-00**	**enforced, State and County regulations**
Existing voluntary actions				
RESPONSIBLE ORGANIZATION OR ENTITY	NAME OF ACTION	DESCRIPTION	ENACTED OR PROJECTED DATE(mm/yy)	STATUS
DDCWSA	**Baseline Monitoring Program**	**Baseline sampling has been underway for a number of years.**	**1987**	**In progress**
Friends of Douglas County	**Adopt-A-Stream: Bear Creek Watershed**	**Stream monitoring and clean-up.**	**1996**	**In progress**
DDCWSA with ARC	**Water Supply Source Water Assessment**	**Inventory and risk assessment for water supply watersheds.**	**Dec-01**	**In progress**
Douglas County Public Works Department, Engineering Division	**Watershed Team Taskforce Meetings**	**Taskforce has been established and met to determine the parties to be involved in the technical Watershed Team.**	**Mar-01**	**In progress**
Douglas County Public Works Department, Engineering Division	**Community Education**	**Currently airing Watershed Wisdom TMDL video on public access channel twice daily.**	**Mar-01**	**In progress, continuing indefinitely**

Additional recommended regulatory or other measures which should be implemented to reduce the loads of the TMDL parameter				
ENTITY/ORGANIZATION RESPONSIBLE	NAME OF PROPOSED REGULATION/ORDINANCE/ OTHER	DESCRIPTION	ENACTED OR PROJECTED DATE (mm/yy)	STATUS
Douglas County Public Works Department, Engineering Division	**NPDES Phase II MS4 Municipal Stormwater Permit**	**Requires jurisdiction to have a comprehensive stormwater program which includes public education and participation, illicit discharge detection and elimination, construction site runoff control, post construction runoff control, pollution prevention, permitting and reporting, and program implementation plans.**	**Late 2002 - Dependent on the date Implementation Plans will be due**	
Watershed Team (A technical Watershed Team will be created comprised of the County Public Works Dept. Engineering Division, Health Department, Planning Department, NRCS, Cooperative Extension Service, and Water & Sewer Authority.)		**Review recommendations from watershed assessments performed for the DDCWSA in other basins in Douglas County to determine regulatory actions that can be taken to mitigate non-point source runoff. Example recommendations include water quality and stormwater control criteria for new developments, septic system certification policy, maintenance requirements of stormwater facilities for landowners, onsite treatment detention basins and wet ponds, land trusts to purchase buffer zones along creeks, sewer service to all new developments, stream corridor management measures, and educational programs.**	**2002**	

III. SCHEDULE FOR IMPLEMENTING MANAGEMENT MEASURES OR OTHER CONTROL ACTIONS:

These **must be implemented within five years** of when the implementation plan is accepted by EPA.

IMPLEMENTATION ACTION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	NOTES/ Responsible Party
Form Watershed Team and Citizen Stakeholders Group[1] and facilitate regular meetings	X					Douglas County Public Works Department, Engineering Division
Organize implementation work with stakeholders and local officials to identify potential remedial measures and potential funding sources	X	X	X			Douglas County Public Works Department, Engineering Division
Review monitoring data for possible source information.	X					Douglasville-Douglas County WSA
Identify, map and rank potential sources of fecal coliform after analyzing monitoring data and receiving public input		X				Watershed Team
Develop management programs to identify nonpoint sources of pollution and possible controls	X	X	X			Douglas County Public Works Department, Engineering Division
Implementation of mandatory controls, if not already in place		X				Douglas County Public Works Department, Engineering Division
Organize education and outreach programs.	X	X	X			Douglas County Public Works Department, Engineering Division
Implement education and outreach programs.			X	X	X	Douglas County Public Works Department, Engineering Division
Detect and eliminate illicit discharges.			X	X	X	Douglas County Public Works Department, Engineering Division
Evaluate additional management controls needed (ongoing)	X	X	X	X	X	Watershed Team
Monitor and evaluate results.				X	X	Douglasville-Douglas County WSA
Reassess TMDL allocations					X	Watershed Team
Provide periodic status reports on implementation activities		X	X	X	X	Douglas County Public Works Department, Engineering Division
If needed, begin process for Phase II (next 5 yrs.) and subsequent phases					X	Watershed Team

[1] The Citizen Stakeholder Group will be made up of volunteer adopt-a-stream groups, large landowners, civic groups, homeowners associations, citizens, and other significant stakeholders. This group will identify areas of concern, offer input and feedback on plans, provide and aid in public education programs, and recruit support from the community.

IV. PROJECTED ATTAINMENT DATE AND BASIS FOR THAT PROJECTION:

The projected attainment date is 10 years from acceptance of the implementation plan by EPA.

V. MEASURABLE MILESTONES:				
	NUMBER			
Management controls and activities already implemented	**2**			
Management controls and activities proposed in five-year work program	**3**			
Management controls and activities actually implemented in five-year work period		(to be completed after 5 years)		
Stream sampled to identify areas of concern	See monitoring plan			
IV. MONITORING PLAN				
Describe previous or current sampling activities or other surveys to detect sources or to measure effectiveness of management measures or other controls				
ORGANIZATION	TIME FRAME	PARAMETERS	PURPOSE	STATUS
Douglasville/Douglas County WSA	**4 sites weekly, 6 sites monthly**	**Fecal Coliform, pH, turbidity and nutrients**	**Baseline monitoring**	**In place for past 14 years**

Describe any planned or proposed sampling activities or other surveys. Scheduled EPD sampling can be found in the Basin Planning document.)

ORGANIZATION	TIME FRAME	PARAMETERS	PURPOSE	STATUS
Douglasville/Douglas County WSA	**4 sites weekly, 6 sites monthly**	**Fecal Coliform and nutrients**	**Baseline Monitoring**	**Continuation of existing program**
Douglas County Public Works Department, Engineering Division	**Bi-weekly or monthly**	**To be determined with the NPDES Phase II Stormwater Plan (turbidity, heavy metals if necessary and fecal coliform if necessary)**	**Source locations, verification of status and progress monitoring**	**To be determined, if necessary**

VII. CRITERIA TO DETERMINE WHETHER SUBSTANTIAL PROGRESS IS BEEN MADE:

% Concentration or load change (monitoring program)

Categorical change in classification of the stream (delisting the stream is the goal)

Regulatory controls or activities installed (ordinances, laws)

Best management practices installed (agricultural, forestry, urban)

COMMENTS:

Bear Creek TMDL Implementation Plan Narrative
Douglas County, Georgia

Background and Purpose

Bear Creek is in the Chattahoochee River Basin in Douglas County. A four-mile segment from Lakeside Drive to Bear Creek Reservoir was listed on the 303(d) list of the State of Georgia for violating the water quality standard for fecal coliform bacteria, and only partially supporting its use (fishing). Fecal coliform bacteria is bacteria found in the intestinal tract of humans and animals. Its presence in streams, rivers and lakes is an indicator of possible harmful pathogens.

For each waterbody on the 303(d) list, the U.S. Clean Water Act requires a TMDL or Total Maximum Daily Load be developed for each pollutant. A TMDL is a calculation of the maximum amount of a pollutant, from both point and non-point sources that a waterbody can receive and still meet water quality standards. The U.S. EPA developed a TMDL for Bear Creek showed that a reduction from sources of pollution for fecal coliform was needed.

The purpose of this implementation plan is to reduce or eliminate the sources of fecal coliform bacteria draining to the Bear Creek in order to meet the fecal coliform water quality standard.

Plan Preparation

This plan was developed with a watershed team made up of representatives of the Douglas County Engineering Department, the Douglasville - Douglas County Water and Sewer Authority (DDCWSA), the Douglas County Health Department, the Atlanta Regional Commission (ARC). The Douglas County Engineering Department is the lead agency on the plan and worked with ARC to draft the plan. The plan was reviewed at a public work session of the Douglas County Commission on March 20, 2001. The plan is a phased approach over a five-year period that begins with convening a stakeholder group in the first year. The plan provides for activities and a schedule to achieve the load reductions and achieve the TMDL.

TMDL Data and Potential Sources of Pollution

Bear Creek was listed on Georgia's 303(d) list due to samples collected as part water quality sampling by the DDCWSA. Bear Creek was placed on the 303(d) list due to elevated fecal coliform concentrations from samples collected during 1994 and 1995. Samples have been collected from this site and analyzed on a weekly basis from 1988 – July, 1992, and on a monthly basis since July, 1992. The sampling is part of the DDCWSA's comprehensive watershed protection and monitoring program. The EPA TMDL document used mathematical modeling to predict a fecal coliform 30-day geometric mean. The allocation model results from the TMDL document are confusing because the existing load (130cfu/100ml) is lower than the target TMDL (175cfu/100ml). However, water quality sampling data collected by the DDCWSA show that there are elevated levels of fecal coliform in the creek. Thus, it is appropriate and necessary to move forward in developing a plan to correct the contamination. The 1998 EPA TMDL documents recommended a 20% reduction from agriculture sources. The TMDL analysis apparently did not take into account recent suburban development in the watershed, which could also be a source of contamination.

The Bear Creek watershed includes, residential, institutional, commercial, agriculture and forest land uses. It is located in a rapidly growing county and is undergoing urbanization. Possible specific causes of increased levels of fecal coliform in Bear Creek include leaking septic tanks,

stormwater runoff, livestock, domestic animals and wildlife. Monitoring and analysis of data collected as part of the implementation plan will be necessary to determine the actual source of fecal coliform bacteria.

Regulatory and Voluntary Measures: Existing and Future

Douglas County has already undertaken several measures to improve water quality and reduce bacteria in streams and is also scheduled to implement a comprehensive stormwater runoff control program.

The County adopted a Watershed Protection Ordinance in 1978 that was last updated in March of this year. This ordinance requires 100' stream buffers and 150' setbacks for all impervious surfaces, septic tanks, drain fields, and animal livestock/pasturing, a maximum 25% impervious surface area and maximum densities for sewered areas of 2.5 du/ac and unsewered of 1 du/ac. The County Health Department enforces the Septic System Code as updated in February 2000.

Douglas County has begun general education of the public on TMDLs and nonpoint source pollution by airing the Georgia DNR video "Watershed Wisdom" daily on the local public access television channel. Douglas County also convened a task force to develop the technical Watershed Team to begin the implementation plan.

Within two years Douglas County will develop a NPDES Phase II Municipal Stormwater Permit Program. This will be a comprehensive program to control polluted stormwater runoff. Measures included in this program are: public education and participation, detection and elimination of illicit discharge to storm drains, construction site runoff control, post construction runoff control, and pollution prevention. The Phase II Municipal Stormwater Program is planned to be in place by 2003.

Douglas County will also work with the Watershed Team and the Stakeholders Group to review and evaluate other potential management measures that could be put in place to reduce fecal coliform bacteria. Examples of the kinds of measures that will be discussed included water quality and stormwater quality criteria for new developments, septic tank certification policy, maintenance requirements for stormwater facility owners, onsite treatment detention basin and wet ponds, and new sewer service.

Schedule for Implementation

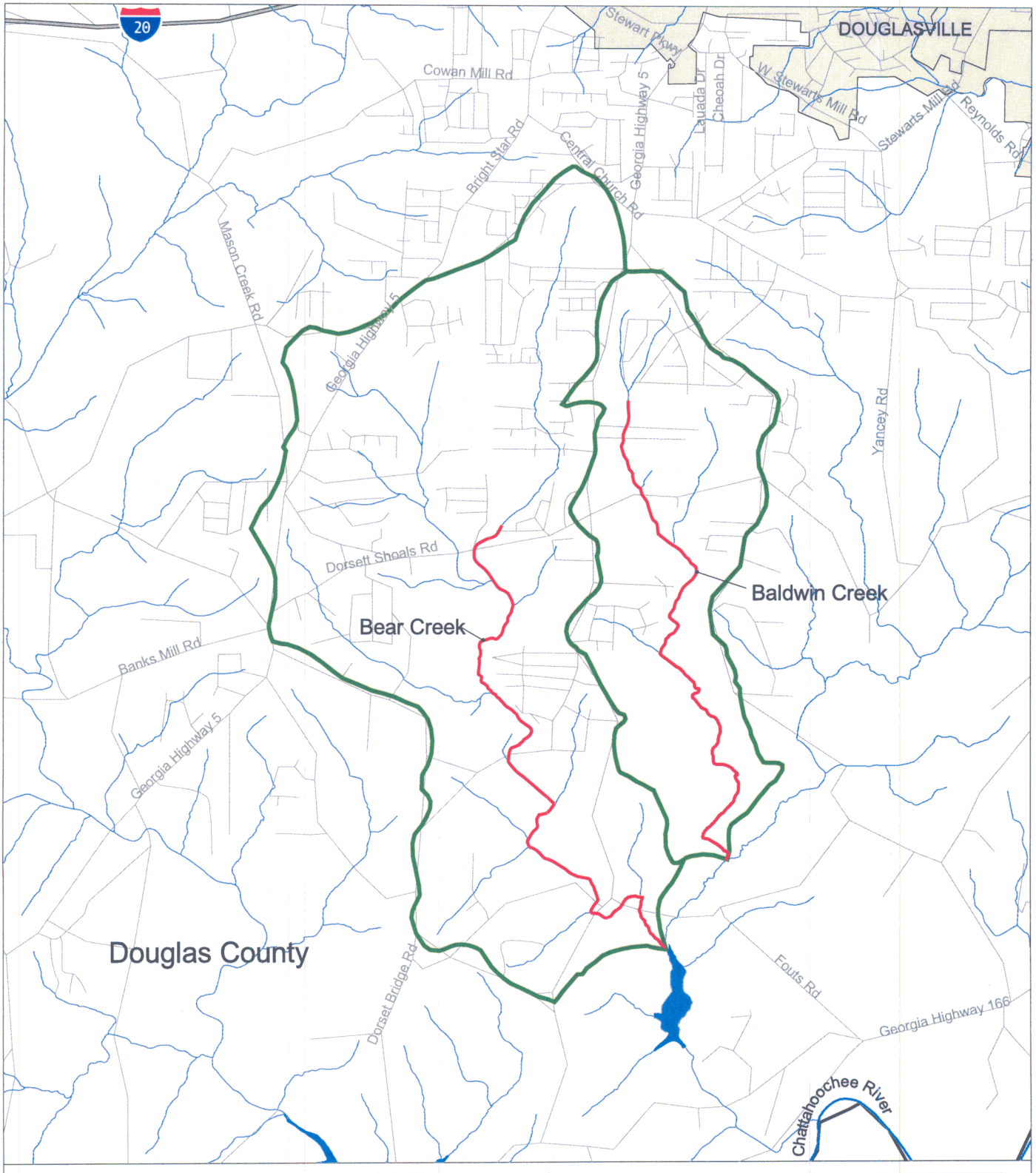
This plan provides for implementation over a five-year timeframe. This schedule is detailed in the plan matrix on page 6. During the first year, the County will convene a stakeholder group. A list of stakeholders in the Bear Creek watershed has been compiled. The watershed team and the stakeholders will work together to identify sources of the problem, identify remedial measures and potential funding sources. The DDCWSA will continue the program of baseline monitoring throughout the 5-year plan and additional monitoring will be considered as needed to help narrow the sources of the problem. Any illicit discharges will also be eliminated as soon as possible when detected. Additional management measures will be reviewed and considered throughout the implementation plan. The results of the plan will be evaluated in years 4 and 5. Periodic status reports will begin in year two. Education programs and outreach will developed and organized in the first three years and implemented in year three to coincide with the program required under the NPDES MS4 Permit. If needed, a process for Phase II (the next five years) will be developed in year five.

Monitoring Plan
The DDCWSA has an ongoing monitoring program that includes weekly sampling of Bear Creek for fecal coliform from 1988 – July, 1992, and on a monthly basis since July, 1992. Additional sampling as part of the NPDES Phase II Stormwater Plan and to narrow the sources of the problem will be developed in year 3 to coincide with the NPDES program.

Funding
Potential sources of funding that should be explored include Clean Water Act Section 319 grants, the State Water Revolving Loan Fund, NRCS incentive grants, and EPA Watershed Assistance grants, and other local and state funding. Partnerships with various community and business groups should also be explored to support the effort.

Criteria to Determine Progress
The criteria to determine whether progress toward attainment is being made will include the results of monitoring. Also, progress will be measured by the controls and best management practices put in place. The plan will be considered a success when fecal coliform bacteria concentrations are reduced enough to remove the Bear Creek from the 303(d) list.

Conclusion
The implementation of the regulatory and voluntary measures that have been put in place in Douglas County and the additional measures that will be developed and put in place as part of this implementation plan will reduce the levels of fecal coliform bacteria present.



Bear and Baldwin Creek TMDL Stream Segments

Map Prepared by Atlanta Regional Commission
Data Source: Georgia Environmental Protection Division's 305(b)/303(d) List